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Suzuki

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(54) **MULTI-STATION TRANSMISSION METHOD AND RECEIVER FOR INVERSE TRANSFORMING TWO PSEUDO-ORTHOGONAL TRANSMISSION SEQUENCES USED FOR METRIC CALCULATION AND BASE STATION SELECTION BASED THEREON**

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(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 168 days.

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(58) Field of Search **375/200, 206, 375/130, 140, 141, 142, 143, 144, 145, 147, 148, 149, 150; 370/319, 320, 334, 335, 333, 332, 331, 342, 503, 507, 509, 510, 515, 203; 455/436, 437, 439, 442**

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,815,028 A • 6/1974 Rakow 375/341
4,884,272 A • 11/1989 McConnell 371/43
5,109,390 A • 4/1992 Gilhousen et al. 375/1
5,179,571 A • 1/1993 Schilling
5,202,903 A • 4/1993 Okanoue 375/347
5,267,261 A • 11/1993 Blakeney, II et al. 375/1
5,289,499 A • 2/1994 Weerackody 375/206
5,351,274 A • 9/1994 Chonnakeshu et al. 375/347
5,450,453 A • 9/1995 Frank 375/200

FOREIGN PATENT DOCUMENTS

WO WO 83/01878 5/1983

OTHER PUBLICATIONS

TIA/EIA Interim Standard—95, Mobile Station—Based Station Compatibility Standard for Dual Mode Wideband Spread Spectrum Cellular System. Chapter 7, Jul. 1993.*

* cited by examiner

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(57) **ABSTRACT**

In a multi-station transmission method and receiver using training signals, a forward signal is transformed in a signal transformation part to two pseudo-orthogonal transmission signal sequences, which are framed in base stations of two adjacent zones and augmented with orthogonal training signals, thereafter being transmitted over the same channels. A signal received by a receiver of a mobile station is separated, by a signal separation part using the training signals corresponding to the respective base stations, into signal sequences received from the respective base stations. The received signal sequences are subjected to an inverse transformation by inverse transformation circuits to obtain two transmitted signal sequences, and one of these signal sequences which has a larger metric is selectively outputted.

8 Claims, 4 Drawing Sheets

